

Claims

1. A system for installing a powered device in a downhole tube, comprising a power line disposed along a production tube, terminating in a first power connector, an orientation means disposed in the vicinity of the first power connector, and a powered device including a second power connector, the powered device being lowered down the production tube and oriented by the orientation means so that the first power connector means and second power connector means engage to connect the powered device to the power line.
2. A system according to claim 1 wherein the first power connector is supported by an alignment means that moves the first power connector from a first unaligned position to a second aligned position as the power connector descends towards it so that the first power connector means and second power connector means engage to connect the powered device to the power line.
3. A system for installing a powered device in a downhole tube, comprising a power line disposed along a production tube, terminating in a first power connector, the powered device being lowered down the production tube, the first power connector being supported by an alignment means that moves the first power connector from a first unaligned position to a second aligned position as the power connector descends towards it so that the first power connector means and second power connector means engage to connect the powered device to the power line.
4. A system according to claim 3 wherein the aligned position may be closer to the centre of the bore than the unaligned position.

5. A system according to either claim 3 or 4 wherein a sleeve is provided with a cammed surface of which is shaped to orient the powered device.

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6. A system according to claim 5 wherein the sleeve includes a keyway to move the first connection means towards the centre of the bore.

7. A system for installing a powered device in a downhole tube, comprising a power line disposed along a production tube, terminating in a first power connector, and a powered device including a second power connector, one or both of the connectors being radially displaced as the powered tool is lowered such that the connectors are aligned for engagement.

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8. A system according to claim 7 wherein the second power connector is radially displaced.

9. A method according to the invention comprising connecting an electrical power cable to a first part of a wet mateable electrical power connector which is secured to a lower region of a production tubing; lowering the production tubing and the electrical power cable into the well; lowering through the production tubing an electrically driven downhole fluid transducer system which is equipped with a second part of a wet mateable electrical power connector; releasably latching the transducer system to the production tubing such that the two parts of the wet mateable power connector face each other, and lowering the electrical submersible fluid transducer system.

10. A system for removing liquid from a portion of a borehole, comprising

a motor;

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a pump;

a tube disposed within the borehole so as to define an annulus between the outer surface of the tube and the wall of the borehole

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a packer sealedly separating the annulus above the packer from the lower part of the borehole,

such that gas may be produced up up the bore of the tube, and liquid
15 may be pumped into the annulus above the packer.

11. A system according to claim 10 wherein the motor and pump may be moved along the tube.

20 12. A system according to any previous claim wherein the motor is an electric motor, and an electric conductor is provided disposed along the tube to supply the motor.

13. A system according to claim 12 wherein the motor and pump include
25 a connection means for electrically engaging with the electric conductor.

14. A system according to any previous claim wherein a conduit passes through the packer to provide fluid communication between the pump and the annulus above the packer.

15. A system for removing liquid from a portion of a borehole,
comprising

5 a tube disposed within the borehole so as to define an annulus
between the outer surface of the tube and the wall of the borehole

and a sump packer sealing the sump of the borehole with the
borehole above it

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such that a motor and pump may be used to direct liquid in the
borehole either up the annulus, or below the sump packer.

16. A system for removing liquid from a portion of a borehole,
15 comprising

a motor;

a pump;

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a sump packer sealing the sump of the borehole with the borehole
above it

the inlet of the pump being in fluid communication with the borehole
25 above the sump packer, and the outlet of the pump being in fluid
communication with the borehole beneath the packer.

17. A system according to claim 16 wherein the motor is an electric motor, and an electric conductor is provided disposed along the tube to supply the motor.
- 5 18. A system according to either claim 16 or 17 wherein the pump includes a conduit running from the outlet of the pump and through the sump packer.
- 10 19. A system according to any of claims 16, 17 or 18 wherein the pump extends through the packer, with the outlet of the pump situated beneath the bottom of the packer.
- 15 20. A system according to claims 16 and 19 wherein the motor is attached to the pump, and an electric cable extends between the electric conductor disposed along the tube and the motor.
- 20 21. A tube installed in a borehole to define an annulus, having a packer sealedly separating the annulus above the packer from the lower part of the borehole, the tube being adapted for use in any claims 16 to 20.
- 25 22. A system for installing a powered device in a downhole tube, comprising a power line disposed along a production tube, terminating in a at least power connector or contact, and a powered device toolstring which may be lowered down the tube, the powered device having a corresponding power connector or contact, the two contacts making electrical connection when the powered device toolstring is located adjacent to the power connector or contact of the production tube.

23. A system according to claim 22 wherein at least one of the power connectors or contacts are annular.
24. A system according to either claim 22 or 23 wherein a protective
5 element is locatable adjacent to the power connector or contact of the production tube, the protective element being displaceable by the powered device toolstring to reveal the power connector or contact of the production tube.
- 10 25. A system, and method of operating the system, as described and illustrated herein.